



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

## A STUDY OF TETRAPLODON AUSTRALIS.

BY I. HAGEN.

*Tetraplodon australis* Sulliv. & Lesq. has been very little studied. This fact is accounted for by the circumstance that the specimens in the various herbaria were collected for the most part too late in the season and hence in a condition unfavorable for study. I am, however, happily in possession of fine material collected at my request by Mr. Severin Rapp, at Sanford, Florida, during the month of December, 1904. An examination of this material has furnished the details which enable me to determine its relationship decisively.

Why the authors of the last half of the nineteenth century placed this species in the genus *Tetraplodon*, I have never been able to comprehend, and a study of Mr. Rapp's collections has shown me that this genus is precisely that one of the sub-family Splachnae with which it has least in common. There are important differences in nearly all parts of the sporophyte: — the seta is soft and hyaline in *T. australis*, solid and colored in the other species of the genus; the columella is exserted in the former, included in the latter; the teeth which are bigeminate in the other species of *Tetraplodon* are geminate only in *T. australis*, and, in addition, in this latter they have central cavities, though solid in the other, a condition which is due to a difference in the number of layers of cell tissue from which they originate; the calyptra is elongated below the operculum, cucullate or rarely campanulate in true *Tetraplodon*, while it is conical and covers only the top of the operculum in *T. australis*.

Nor can our species be *Haplodon*, because of its exserted columella and geminate teeth with interior cavities. There remains then only the genus *Splachnum*, and with this it agrees in all the characteristics cited, as separating it from the two other genera of the same sub-family. But if the descriptions of the stem structure of *Splachnum* found in literature be compared with the facts noted in studying the stem of our *Tetraplodon* there appear to be differences. The cross section of the stem in *T. australis* shows false leaf-traces, while in the case of *Splachnum* there are said to be true leaf-traces. But the information furnished by literature upon this point is not exhaustive and the generic difference between *Splachnum* and *Tetraplodon australis* actually non-existent. Lorentz, who had studied the structure of the stem in the two *Splachnums*, *S. sphaericum* and *S. luteum*, says after describing it in *S. sphaericum* (Flora, 1867, p. 537): "We find this structure of the stem also in the following species of our genus," i. e. *S. luteum*, "not, however, in *Tayloria* nor in *Tetraplodon*. It is perhaps not too bold to assume that this characteristic occurs also in other species of the genus and furnishes an excellent generical distinction from the other Splachnaceae." This general conclusion made by him with reservation, is reproduced without restriction by Limpricht. (Laubm. Fl. Deutschl. Oesterr. u. d. Schweiz. (II. p. 164.). But if this is true in the species examined by Lorenz, it is however incorrect in *S. ampullaceum* and *S. vasculo-*

*sum*, both these species having false leaf-traces in the stem precisely as in *T. australis*. Here we see the danger of generalizing too far.

*T. australis* agrees exactly with certain *Splachnums* in another characteristic taken from the vegetative parts, namely in the structure of the costa. It is Lorenz again who has given some hints on this subject. According to him the costa of the *Splachnaceae* is composed of two large ventral cells ("guides"), of a certain number of large dorsal cells, and of a central cellular body whose principal element and characteristic is a bundle of thin-walled, angular cells of the kind he has called "comites;" in addition, one usually finds between these "comites" and the large dorsal cells a larger or smaller number of cells which he designates as "intercalary" cells, formed sometimes like the guides, sometimes difficult to distinguish from the "comites," sometimes thin-walled, sometimes rather incrassate. In *Tetraplodon* he observes that these intercalary cells are present, at least in the most developed part of the costa, and that they are nearly stereid; as regards *Splachnum* he describes the same structure in *S. sphaericum*, while in *S. luteum* he finds a bundle of "comites" surrounded by numerous, rather large, polygonal, thin-walled cells. In *S. vasculosum* and in *S. ampullaceum* I have observed a little different structure: the "comites" form here a band, which extends between the ventral and the large dorsal cells along the median line of the costa; at each side appear, usually, some large rounded, thin-walled intercalary cells, having nearly the aspect of the ventral ones. These intercalary cells are wanting, however, in *S. ampullaceum*, in the upper part of the leaf where the central cellular body is consequently represented by the "comites" alone. The same structure is found in *T. australis*, (and likewise in *Haplodon*) in all parts of the costa which is composed here also of "comites" surrounded by the large ventral and dorsal cells. We have here another characteristic which distinguishes *T. australis* from true *Tetraplodon* and at the same time connects it with *Splachnum ampullaceum*.

That *T. australis* belongs to the genus *Splachnum* is thus set beyond doubt, and it becomes apparent that it is *S. ampullaceum* with which it is most nearly allied. This relationship is in fact so close that without incroaching on its specific claims, we can characterize it as an *S. ampullaceum* with hyaline seta, apophysis reduced to a minimum and narrower, deeply dentate leaves.

It goes without saying, that this conception should be expressed in the name. In transferring it to the genus *Splachnum*, however, I take the advantage of the occasion to restore to it the oldest specific name, so long unnoticed and revived only in 1883 by Lindberg, who was convinced by his studies of the herbarium of Dillenius that the type of *Phascum caulescens* L. is the same plant as *Tetraplodon australis* Sulliv. & Lesq.

*SPLACHNUM CAULESCENS* (L.) Dicks. in Trans. Linn. Soc. III, p. 239 (1797).

Synon.:

*Sphagnum foliis tenuibus, gramineis, pellucidis* Dill. Hist. Musc. p. 550, (1741).

*Phascum caulescens* L. Sp. pl. ed. I. p. 1570 (1753) non in herb.

*Bryum Pennsylvanicum* Brid. Musc. Rec. IV, p. 36 (1803) nec. Mant.

Musc. p. 119, (1819).

*Splachnum setaceum* Hook. & Wils. in Drumm. Musc. Amer. Bor. ed. II.

No. 27, (1841) fide Sulliv.

*Tetraplodon australis* Sulliv. & Lesq. Musc. Bor. Am. No. 151 (1856).

*Tetraplodon caulescens* Lindb. Krit. Granskn. af Moss. uti. Dill. Hist. Musc

p. 14, (1883).

Delin.:

Dill. l. c. Tab. 85, fig. 15; Dicks. l. c. Tab. 20, fig. 2; Sulliv. Icon. Musc. Tab.

58.

Exsicc.

Drum. l. c.; Sulliv. & Lesq. l. c.; Holz. Musc. Acro. Bor.—Am, No. 68.

Regarding the citation from Linnaeus it should be noted that his *Phascum caulescens* of Sp. pl. is founded on Dillenius' plant, but in reality he did not know this species as Schimper's examination of his herbarium shows (Journ. Linn. Soc. XI, p. 246). According to this distinguished bryologist, a specimen labeled "*Phascum caulescens* lectum in Lapponia cit. Dillen, 550, T. 85. f. 15," belongs partly to *Splachnum angustatum*, partly to *Cynodontium Bruntoni*; and another specimen of which Schimper cites the label as follows: "*Splachnum*—North America, sec. Smith, *Splach. caulescens* Dicks." is, according to him, a *Tetraplodon angustatus* forma *gracilescens*. I interpret the latter label as if the word "*Splachnum*—" alone is due to Linnaeus, the rest added by Smith, who had bought his herbarium. However that may be, it follows from the examination of Schimper, that Linnaeus did not have a correct idea of *Phascum caulescens*, and that the name does not refer to his herbarium but exclusively to Sp. pl. Dickson on the contrary seems to have correctly recognized the plant in question; he says in his "Observations on the genus of Porella and the *Phascum caulescens* of Linnaeus": "The *Splachnum* which I received at the same time with the above when compared with Dillenius' specimen, proved to be the *Sphagnum* figured on Tab. 85, f. 15; the figure is remarkably stiff. This is made a *Phascum* by Linnaeus, but with equal impropriety, it being a true *Splachnum*."

Opdal, Norway, May, 1906.

Lichenology for Beginners (Sargent). A. M. S.....	17	Publisher Sargent's Work on Lichens .....	52
Moss Ex. Club. Census Cat. B. Hepatics (Macvicar). Caroline C. Haynes .....	28	Revised Key to Hepatics B. Is. A. M. S.....	74
Organography of Plants (Goebel) Elizabeth G. Britton. 10, 11, 12		Musci Acrocarpi Boreali-Americani (Holzinger). A. J. Grout.....	17, 24, 105
Publisher Dr. Schneider's Work on Lichens.....	52	North American Musci Pleurocarpi (Grout). Ed. B. Chamberlain.....	106

## ERRATA.

- Page 6, line 24, for 5-5 read 3-5.  
 Page 6, line 34, for Lindb. read Kindb.  
 Page 8, line 12, for SUBASPARRIMUM read SUBASPERRIMUM.  
 Page 21, line 1, for 8: 3, 1905, read 8: 37, 1905.  
 Page 26, line 9 from below, for *Spagna* read *Sphagni*.  
 Page 30, line 18, for *leucopheae* read *leucophaea*.  
 Page 32, lines 19 and 22, for *Selwini* read *Selwyni*.  
 Page 41, line 31, for Bottiaceae read Pottiaceae.  
 Page 42, line 9, for 1894 read 1904.  
 Page 42, line 13, for A. J. G., type read A. J. G.; and type.  
 Page 44, line 13, for *Tyloriae* read *Tayloriae*.  
 Page 45, line 22, for 41 read 141.  
 Page 49, line 6, for *furfuraceae* read *furfuracea*.  
 Page 51, line 7, for AUEANTIACUM read AURANTIACUM.  
 Page 58, line 39, for contex read cortex.  
 Page 58, line 45, for Asi read Asci.  
 Page 61, line 8, for 1 6 read 1:6.  
 Page 63, line 17, for *Lapidozia* read *Lepidozia*.  
 Page 64, line 4, for *accuminatum* read *acuminatum*.  
 Page 64, line 25, for *flagallare* read *flagellare*.  
 Page 64, line 32, for *scoparoides* read *scoparioides*.  
 Page 65, line 33, for *urnigarum* read *urnigerum*.  
 Page 65, line 38, for *piliforum* read *piliferum*.  
 Page 65, line 40, for *recurvens* read *recurvans*.  
 Page 66, line 7, for *quinquefarinum* read *quinquefarium*. Also same error page 72, line 25.  
 Page 72, line 32, insert are, before several.  
 Page 77, line 5, for *setacca* read *setacea*.  
 Page 80, line 21, for John F. Leiberg read John B. Leiberg.  
 Page 81, line 31, for *Physia* read *Physcia*.  
 Pages 84-86 for Li. Um. read Li. Un., *passim*.  
 Page 84, line 22, for margin read margine.  
 Page 86, line 25, for Luec. read Suec.  
 Page 86, line 33, for Scharer's read Schaerer's.  
 Page 86, line 35, for *valleus* read *velleus*.  
 Page 86, line 37, for U. vellea read *U. vellea*.  
 Page 91, last line, for page 60 read page 80.  
 Page 92, line 14, for Splachnae read Splachneae.  
 Page 102, line 3 from below, for S. C. Horrell read C. S. Horrell.  
 Page 103, line 12 from below, for spores read pores.